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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/034,507	12/28/2001	Guanghua Yu	01-1129FS	1270

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EXAMINER	
MENON, KRISHNAN S	

ART UNIT	PAPER NUMBER
1723	

DATE MAILED: 12/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/034,507	YU ET AL.	
	Examiner	Art Unit	
	Krishnan S Menon	1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 October 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) *20-23* is/are withdrawn from consideration.

5)☒ Claim(s) *11-17* is/are allowed.

6)☒ Claim(s) *1-10 and 18-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claims 1-24 are pending.

Election/Restrictions

Applicant's election with traverse of claims 1-19 and 24 in Paper of 10/28/03 is acknowledged. The traversal is on the ground(s) that: no grounds were given. This is not found persuasive because applicant did not provide any grounds for traversal.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 24 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by Williamson et al (US 5,443,724).

Williamson teaches a filter apparatus for coalescing water emulsified by a surfactant comprising filter with a hydrophobic filter medium having surface energy lower than that of the surfactant (see example).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-10, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Williamson (724) in view of Sweet (US 4,978,454).

Williamson teaches an apparatus for filtration of water from hydrocarbons (see example) comprising fresh feed inlet (14-fig 3a), a first dead-end filter having a hydrophobic filter medium (20), a second cross-flow filter having hydrophobic medium (30; col 6 lines 28-50 – hydrophobic materials), a common housing (see fig), a chamber for water settling (at 36) and a clean fluid outlet (24).

Williamson does not teach recirculating the retentate as in claim 1. Sweet teaches recirculating the retentate back to the settling zone in a system for separating stabilized emulsions (see fig 1; col 2 lines 16-32; col 5 lines 9-25). It would be obvious to one of ordinary skill in the art at the time of invention to use the teaching of Sweet in the teaching of Williamson and recycle the retentate back to the settling zone of the housing for separating stabilized emulsions as taught by Sweet (col 2 lines 16-32) for an improved resolution of the problem identified by Williamson (col 4 lines 1-5).

Claim 2 adds the limitation of ratio of cross flow to fresh feed, which is an optimization of the flows depending on the water content in the hydrocarbon. Discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art. In re Boesch and Slaney, 205 USPQ 215 (CCPA 1980); In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977); In re Aller, 42 CCPA 824, 220 F.2d 454, 105 USPQ 233 (1955). Claim 3 has pressure differential between the feed and the permeate (see Williamson col 9 line 59 – col 10 line 21). Claim 4 has operating temperature, about which both references are silent. However, since there is no heating or cooling taught in the references, it would be obvious to one of ordinary skill in the art at the time of invention that the temperature is that of the ambient. Claim 5 adds material limitation to the dead-end filter as nylon, polyester, etc. (Williamson col 15 lines 21-40). Claim 6 has pore size of the dead end filter between 0.5 and 100 microns (col 15 lines 10-21). Claim 7 adds hollow fiber, spiral wound or tubular cartridges for the second filter (col 17 lines 1-18). Claim 8 adds cross flow filter as being made of PTFE (col 8 lines 54-58). Claims 9 and 10 have the porosity of the PTFE membrane at sub-microns level (Williamson: col 6 lines 32-38: Sweet: dialysis, ultrafiltration, etc, which use sub-micron pore-size membranes: col 4 lines 54-57).

Independent claim 18 further adds the limitation of plurality of first and second filters and independent claim 19 further adds the limitation of the first and second filters being in series, which Williamson teaches (see figures).

Allowable Subject Matter

Claims 11-17 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: The closest prior art is Williamson in view of Sweet. Williamson does not teach the following structures of claim 11: A separate water settling chamber, a second cross-flow filter communicating on its inlet end with top chamber, outlet end with water settling chamber and permeate with the permeate chamber, and a sleeve for the cross-flow filter that is non-perforated.

Claims 12-17 depend from claim 11, and therefore, allowable.

Response to Arguments

Applicant's arguments filed 10/28/03 have been fully considered but they are not persuasive.

Argument re rejection of claim 24: Applicant provides a lengthy argument comparing the surface energies of filters used in the reference and by the applicant with that of the components of the emulsion to be separated in an attempt to show how the applicant's invention is superior to that of the reference. However, it may be noted that claim 24 recites only a hydrophobic filter medium having surface energy less than or near to that of the surface energy of the hydrophobic functional group of the surfactant, and the reference teaches that.

Argument re the 103(a) rejections: The main argument is that the Williamson reference teaches two dead-end filters in series whereas the applicant has a dead-end filter followed by a cross-flow filter. Examiner disagrees with this argument because a in

a cross flow filter, the retentate is not accumulated in the filter, but taken out continuously. In Williamson, the second filter functions as a cross-flow filter because the retentate is taken out continuously through the port 34, and is not accumulated in the filter. Since the claim does not structurally differentiate the cross-flow filter of Williamson from the applicant's cross-flow filter, this element of the claim is anticipated by the ref.

In response to the rest of the applicant's arguments (responded below in detail) that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Re the argument about the Sweet ref, the claims do not recite that the retentate and permeate are separately collected, but only recites a system for circulating the retentate. The claim is open-ended, and the ref has a system for circulating the retentate.

The argument, "unique apparatus for the separation of highly emulsified fluids", is not a structural limitation and there is no positively recited structural limitation in claim 2 to indicate such an apparatus.

Argument re claim 3: The bubble point is of a membrane is a known phenomenon, and controlling the operating pressure to below the bubble point to prevent the breakthrough of water is also a known process.

Re claim 4, the reference also maintains the temperature below 130 deg F, since there is nothing in the reference to indicate that the temperature would shoot up above room temperature, and that it is well known that the atmospheric temperature is below 130 degrees F in almost all parts of the world at almost all times.

Claim 5: Applicant argues about surface tensions of the materials, but claims polyester, the common name for polyethylene terephthalate, and also nylon, which is a known hydrophilic material.

Re argument about claim 6, the ref teaches the element of claim 6.

Argument re claim 7: cross flow vs dead-end is already addressed. The vertical vs horizontal orientation is not claimed. Ref teaches spiral wound and other elements as claimed.

Re claim8, ref teaches PTFE as given in the rejection.

Re claims 9 and 10, applicant's arguments are based on matter not positively claimed as structural elements. The references teach the limitations of the claims as given in the rejection.

Arguments re claims 18 and 19: While applicant may have specific arrangements of multiple elements in the specification for the apparatus, such arrangements are not recited as structural limitations in the claims in a way that overcome the references.

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